COMMERCIAL RADIO WORLD LATEST NEWS THE AMATEUR

LIGHTNING DANGER TO ANTENNA SMALL

Wire Less Likely to Be Struck Than Tin Roofs or Metal Gutters on House.

REAL FORCE OF A BOLT

Energy Only About as Much as Is in Pint of Gasoline, Declares Expert.

By G. K. THOMPSON.

Superintendent of the Amrad Co. [Note-The New York Herald re-ently published on this page instruc-ions for protecting from lightning by rounding switch or approved spark or actum tube gap. In this article Mr. hompson discusses lightning and static

In general.]

If your radio installation is not already installed according to regulations you should attend to the matter at once. The regulations are in force the year round and should be complied with as far as possible. That they are not complied with is a well known fact, but this negligence means that after the first thunderclap thousands of people will storm dealers in radio equipment for protective devices and their meager supplies will be exhausted within a few hours.

One of the first questions that comes to the mind of the would be radio user encerns lightning. "Will my antenna tract lightning and cause my home to be struck?" he asks. To the general tablic wireless and lightning seem to be win brothers—probably because the manifestations of both are uncanny and

manifestations of both are intently and systerious. Hoisting a radio antenna over your experty does not endanger your dwelling, your instruments or your family if few simple precautions are observed. For have never felt apprehensive over the presence of the telephone wire running from the pole on the sidewalk to your house. You do not regard the bell vice circuit running from the front door to the kitchen as a lightning conductor, or have you been nervous over the presence of a wire clothesline in your pack yard, the tin roof over your head or the metal gutters and leader bipes.

Conductors About House.

If these common and familiar metal aces and conductors will convey tricity from point to point. The rage radio antenna differs very little in these other conductors and objects, in so far as lightning is concerned radio antenna is much less likely to truck during a heavy thunder storm, et us consider the electrical action takes place in the antenna before during a summer thunderstorm, re is always a certain amount of cospheric electricity present in the In coid weather the amount is very ht and manifests itself in the ratio by what is familiarly known as ic. When warm weather comes atpheric electricity is generated in h larger quantities.

heric electricity is generated in larger quantities. Entense heat of the summer sun prates the molature on ite surface e earth and water from ponds and very rapidly. This evaporated ure or vapor, becoming heated, to the upper atmosphere and uponing the higher levels, where the rature is lower, the water vapor mess into minute drops of molature forms clouds. Each mosture parbecomes charged with a very small nt of electricity.

arges occur within the cloud. These charges are popularly known as sheet, in thing. Every time such a discharge ics place radio waves are emanated if these waves impinge apon your tenna, causing a sharp crash or ckle in the telephone rec ivers if you appen to be listening in.

A thunder cloud must be regarded as huge bubble containing electricity, scharges are constantly taking place within the bubble and inc easing in the earth and we hear a might; thunder cap. If this lightning bor strikes within one-half mile of your anterna, considerable current will be induced in your actual system. This induced current will pass harmlessly to the ground and you will be unconscious at its presence if you have taken the proper precautions.

Let us consider the great bubble onemore. If we prick tiny holes in this
bubble while it is in process of formaation, the pent up electricity will gradu"ally discharge. If we prick enough
holes in the bubble, the electric chargmay leak away so fast that the quantity of electricity within may never
reach the point where the bubble will
burst. The function of the common
lightning rod and the properly grounded
or protected antenna is to prick heles

tenna on House.

Few amateurs in this part of the country even with the best of aerials have
been able to pick up KYW, the Westinghouse station at Chicago, not alone
because of the air line distance of more
than 709 miles, but also because of the
linterference of nearer stations on the
same wave lengths. At least one fadio

interference of nearer stations on the property grounded or protected antenna is to grick pless and convey its charge silently to the ground. For this purpose the average radio antenna is searchy as effective to the ground. For this purpose the average radio antenna is searchy as effective as the lightning rod.

If Antenna is Struck.

"What will happen if a lightning bold actually strikes my antenna." Is a familiar question. Let us consister the nature of a lightning bold. The heavy thunderelap which attends its appearance gives the impression of tremendous control. The average radio antenna is search of fact its bark deceives one of its might. The average lightning bold contains about as much energy as represented in a pint of gacoline. The only difference is that in the energy of lightning is exerted instance. Take, for instance, a cupful of gasoline and ignite it under a saucepan containing a tallow candie. The heat of the tennal canding and ignite it under a saucepan containing a tallow candie. The heat of the tennal canding and ignite it under a saucepan containing a tallow candie. The heat of the tennal canding is exerted instance and samining. Take another cupful of gasoline and lightly the properties of the candie. The heat of the candie. The phenomenon is silent and samining. Take another cupful of gasoline will be a concrete wall. The effect is startling, light the tallow candie. The heat of the transmitted in the first case the energy in the tallow candie. The mergy in the tallow candie. The case of crystal detector sets. The benchmonon is silent and the candie. The phenomenon is silent and the candie of the candie of the candie of the canding and the second case the energy in the tental canding the candin

Schenectady's Electrical Wizard



Dr. CHARLES P. STEINMETZ.

Special Dispatch to The New York Herald.
Schenectary, N. Y., April 22.—There is no such thing as the ether, Dr. Charles P. Steinmetz, chief consulting engineer of the General Electric Co., said recently, and to make it most emphatic he said it over the great broadcasting station WGY, by which his words were carried through space, not the ether. Ether has been the most convenient

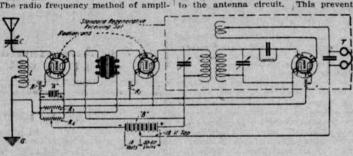
HOW AMATEURS MAY GET INCREASED HEARING RANGE

Radio Frequency Amplification or Audio Frequency Amplification Would Solve Problem When Antenna Proves Unsatisfactory.

Radio amateurs who are unable to erect a satisfactory antenna, for any one of a score of reasons, may greatly improve the strength of their concerts or increase their hearing range by means of radio frequency amplification, audio frequency amplification or a combination of both.

In cases where the receiving station is near the transmitting station the energy received is usually sufficient to reproduce sounds without radio amplification. When the receiving station is more remote the signal must be built up, or amplified, before it passes through the detector and the stages of audio amplification. If radio amplification the energy received is usually sufficient to reproduce sounds without radio amplification. When the receiving station is more remote the signal must be built up, or amplified, before it passes through the detector and the stages of audio amplification. If radio amplification the energy received is usually sufficient to reproduce sounds without radio amplification. One decided advantage of using this

through the detector and the stages of audio amplification. If radio amplification is not used audio frequency amplification in these cases is frequently tube circuit cannot find their way back



the becomes charged who had been been been been been been been mosture particles in the upper of become more dense the particles incoming antenna currents through successes the electrical charge on each article until finally a thunder cloud is crued which is very highly charged ith electricity.

Sheet Lightning Results.

It is a known fact that when thunders are in formation electric discoming are in formation electric discoming antenna currents through successive stages until it becomes of sufficient intensity to enable electrical one of take place. With the addition of one or take place. With the addition of one or take place in the positive leg of the filament circuit instead of the negative.

Sheet Lightning Results.

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Will be generated to actuate either the generative circuit. Battery will be circuit shown, that of the place in the positive leg of the filament circuit instead of the negative.

The circuit within the dashed line is a standard regenerative circuit. Battery wave lengths.

The circuit within the dashed line is a six volt \$0 ampere hour siz storage batery; "B" standard 22.5 vo plate batteries, with 18 volt tap; C, variable antenna series condenser of the circuit shown, that of the place in the positive leg of the filament circuit instead of the negative.

The circuit within the dashed line is a six volt \$0 ampere hour siz storage batery; "B" standard 22.5 vo plate batteries, with 18 volt tap; C, variable antenna series condenser of the circuit shown, that of the place in the positive leg of the filament circuit instead of the negative.

plification of signals of both long and short wave lengths.

It has not been possible in former attempts to obtain radio frequency amplification to get the best results on certain wave lengths without sacrificing others.

variable antenna series condenser of .0006 mfd. max.; L a simple tuning coll, either tapped or fitted with a sider: R-1 and R-2, standard filament rheotorical results on certain wave lengths without sacrificing others.

USES ELECTRIC MAIN TO PICK UP CHICAGO

Heights Amateur Gets Unusual Results Without Au-

tenna on House.

or protected antenna is to prick holes same wave lengths. At least one tadio

Electric League Plans Radiophone Luncheon

MEMBERS of the New York Electric League, an organ-ization of representatives of big electric and radio companies, vill have a radio luncheon Wednesday at the Hotel Astor.

Walter Neumuller, secretary of the Edison company and president of the league, will address the members by radio. Musical con-certs will then be given from the radio stations of the Westinghouse Company at Newark and the Western Electric in West street. John Mills of the Western Electric Company will speak on the phenomena of radio, using motion pictures to illustrate his talk.

EVENTS OF THE WEEK IN THE RADIO FIELD

Station WGY, Schenectady.

(General Electric)

P. M.—Stock and market rep 45 P. M.—Revellle, bugler, Greenough; On the Gin. Shore, Overseas Orchestra, Cough,

Shakespeare's 300th Anniversary Celebrated To-day at WJZ-C. H. Outerbridge, of Port Authority, to Talk on Harbor Development.

The programs for the coming week of he various broadcasting stations which an be heard within a radius of several undred miles of New York are pre-ented herewith. During the week The NEW YORK HERALD will print the daily program of the stations each morning. Tune instruments for 380 meter waves, except in the case of WVP, which sends on 1,450 meters.

Station WJZ, Newark. (Westinghouse)

Weather Forecast (Official)—Dally, 11 A. M., 12 noon, 5 and 10:01 P. M.

sharp.
Shipping News—Weekdays, 2:05 P. M. (excepting Saturday), by Marine Engineering and Shipping Age.
Official Arlington Time—9:52 P. M. Agricultural Reports (Official)—Daily, 12 noon and 6 P. M.
Final Baseball Scores—Every evening at 7 officek.

SUNDAY,

100 P. M.—Radio Chapei services; sermon by
the Rev. A. B. Cohoe, D. D., aszisted by
the choir of twenty-four volces, conducted
by Julius O. Zings. F. A. G. O., also conductor of the Hayden Orchestra, East
Orange. The choir won first prize at the
Newark Music Festival: First Baptist
Church of Montelair, N. J.

100 P. M.—'A Midsummer Night's Dream'
will be read by Mrs. Emma Shertdan Fry,
author of "Educational Dramatics," formerly on the faculty of the American
Academy of Dramatic Arts and later
dramatic director of the Educational Dramatic League.

York and its Benefits to the Nation, by C. H. Outerbridge, chairman, the Fort of New York Authority, established by compact between the States of New York and New Jersey, to 10:15 P. M.—Concert by the Westinghouse Band, 25 pieces, under the direction

of Louis Morrell.
WEDNESDAY.
P. M.-Animal stories by Florence Smith
Vincent; courtesy New York Evening Tel-

P. M.—Animal stories by Figure 1.

P. M.—Animal stories by Figure 1.

Sol P. M.—What Federal Meat Inspection Means to the American Public," by Dr. Robert M. Mullings, United States Department of Agriculture.

Stories 1. M.—Concert by the New York University Musical Clubs, A. J. Kiebet, Jr., president: I, college songs, "H. You Want to Go to College" and "Our Lodia," Glee Club: 2, "Martin March," Bitting, and "Say It With Music," Instrumental Club: 3, "New York University," Theodore Distler: 4, "Winter Song," Bullard, and "The Bee," Glee Club: 5, saxaphone solo by John Prail: 6, "The Serenade," Haydin, and "The Violet," Glee Club. Part II: 7, solo, Niol Nanna, G. Quintano; 12, New Thy Sweet Voice, "Saint Saens, and "Kalooa," Weldt, Iestrumental Club: 9, "Give a Rouse," Bantock, Glee Club; 10, "Jazza Be Artists," All of a Kind; II, violin solo, Nini Nanna, G. Quintano; 12, New York University Song, Genus, "Oo, Glee Club, Sott, Glee Club; 15, banjo solo by Harry Six; 14, "Old Uncle Moon," Scott, Glee Club; 5, cello solo by A. J. Zack: 16, "Palisades," official New York University song, Genus, "Oo, Glee Club, N. R.—No. 7, No. 11 and No. 55 on the program are at the request of the Lecture Hurcau of the New York Board of Education.

THURSDAY.

Bureau of the New York Board of Education.

7 P. M.—"Jack Rabbit Stories" by David Cury, New York Evening Mall.

1:30 P. M.—"Suggestions for Europeau Travel by fir. Ibah. Equitable Trust Company of New York Evening Mall.

1:45 P. M.—"Manufersance of Storage Batteries, by F. Slater.

8 P. M.—"An Hour in Tone Land," by Addye grangain Hall, chairman of the Junior department of the National Federation Music Cubes, who will present the Northeet Trio, Catherine Norfleer, violinist Helen Norfleet, planist; Leeper Norfleet Cellist, Program: "Hungarian Dance, Brahms, "Menuel in G. Beethowen, "By the Brook," Bosdeffre, "Scherzofrom B fiat Trio?" Sembert: "The Swan," Saint Saens; "Waltz in A major," Brahms, and "Molly on the Shore," Grainger, P. M.—Recital by Mabel Corlew, dragrainger.

Grainger.

P. M.—Recital by Mabel Coriew, dramatic soprano and teacher: courtesy
Acollan Company.

FRIDAY.

the Moon" stories (c)

Acollan Company.

PRIDAY.

P. M.—'Man in the Moon' stories (c), Newark Sunday Call
150 P. M.—Concert by the Filipino Orchestra from the steamship Lone Star State. The largest and probably the most novel orchestra on any vessel plying the seven seas of the world is that aboard the Lone Star State of the United States Linea, which runs between New York and European ports. This orchestra is composed of twenty-two Filipino youths, all of them veterans of the United States Navy service during the world war. The repertoire of the Pilipino orchestra is a broad one, ranging from native pieces to grand opera selections. The instruments used by the man are entirely of the string variety and the effects they obtain in playing if weathen pieces are estrangly appealing. The Filipino orchestra was brought into being through the effects of Capt. Frank I Hurchart, commander of the Lone Star State got the benefit of this wonderful orchestra, but through the wire-less the concert are broadcasted in midocean to ships that pass taske night.

P. M.—During an interemission of the concert given by the Filipino orchestra. With the concert given by the Filipino orchestra of Business Conditions. Will be read by Richard.

On Wyckoff, editor of the Magazine of Wall Street.

P. M.—Recital by Mise Bernadine Gration. Street.
P. M.-Recital by Miss Bernadias Gration,
American coloratura soprano, from McPherson, Kan., who studied under the

" RIDAY.

Station WGI, Medford Hillside, (Amrad)

SUNDAY.

7:45 P. M.—Pollee reports for City of Boston
8:00 P. M.—Radio church service. Sermon
by the Rev. Chauncey G. Hubbell of Lex.
Ington, Massa, "A Bible Talk with 116rs
trations from Nature." Vocal selections
trations from Nature." Vocal selections
trations from Nature." Vocal selections
trations from Nature.
St. Paul's Church, Brookline. Organ accompaniet, Adelbert Morse. Selections,
"Holy City." A Dream of Paradise
115 F. M.—Musical concert.

lows (Cowen), Bonnie Doon, Scotch song; Mon cecur source a ta velx (Saint-Saens), from "Samson and Dellah"; Wake Up' (Phillips), 'Come Back to Erin' (Caribe).

8-45 P.M.—Schubert Chib of Women's Voices, Katherine Crockett McPavitt, conductor, Lucina Jewell, niani-t. Selections; 'Parcarolle, Starry Night' (Densmore); 'Blue Danube Waltzes' (Srauz-will-om), Schubert Club; 'The Wander Rose' (Jewell), 'Flow Gently, Sweet Afron,' old Scotch song, by Mrs. McPavitt; 'Murmuring Regera', 'There Are Fairies' (Jewell), by Miss Linnell.

THURSDAY. E. Snell, bass; E. G. Shea, Xylophone and drufts. "Venetian Love Moon," Calri-Castle Orchestra: "Kentucky Blue," systamone duct, C. Rowe and Al Voicht: "Good By Shanghai," for trot, Calris Castle Orchestra: "Teasing." Xylophone solo, E. G. Shear: (a) "Sapphire Seas, (b) "Angel Child." Calris Castle Orchestra. "La Campanella," piano solo, Duo-Art, as piayed by Ferruccio Busoni; "No Use Crying," fox trot, Calris Castle Orchestra.

Miss Linnell.

THURSDAY.

7:30 P. M.—Bedtime Story for the Calidren,
"The Ways of a Tree," read by Miss
Fenire I. Randall.

7:45 P. M.—Late News Flashes—Baseball 7:45 P. M.—Late News Flashes-Basebail scores.
7:55 P. M.—Police reports for city of Boston.
7:05 P. M.—What Radio Means to the Home Life of America, by Joe Mitchell Chatotle, author and unblicist.
8:15 P. M.—Sylvia Waite, mexac-soprano.
8:15 P. M.—Sylvia Waite, mexac-soprano.
8:lections: "Electic" (Massenet, "Sing. Sing. Birds on the Wing" (Nutting).
"Danny Boy" (Wetherby).
8:50 P. M.—The combat scene between King James of Scotland and Roderic Dhu, from "The Lady of the Lake" (Scott), recitation by Charles F. Atkinson.
7:30 P. M.—Latest news flasher; basebail scores.

LATEST AND MOST POPULAR

Station KDKA, Pittsburgh.

WEEK DAY SCHEDULE, 12:20 A. M.—Music, 1:00 P. M.—Music, 2:20 P. M.—Music, 4:20 P. M.—Music, 4:20 P. M.—Music, 6: M.—Music,

*On Saturday special concert from 2:00 to 4:00 P. M.
7:30 P. M.—Bedtime story for the kiddles, 7:45 P. M.—Special news, Government market reports, summary of New York Stoc-Exchange, weather report, 8:30 to 9:00 P. M.—Nusienl program, 9:00 to 9:05 P. M.—News (United Press Services)

2006 to 2005 P. M.—News (United Press Service).

2.55 to 19.30 P. M.—Musical program.

2.55 to 19.00 P. M.—Arlington time signature of the standard time. Starting at 3.39 o'clock and continuing every fifteen minutes increater baseball cores of the American and National league, will be broadcasted by innings, and on Saturdays those of the International and Americans.

(Westinghouse)

Radio Books

Radio Hook-Ups, by M. B. Sleeper \$.75 Radio Design Data, by M. B. Sleeper

A hook giving tables and data for designing receiving and transmitting apparatus. .75 Construction of New Type Trans-Atlantic Receiving

Set, by M B. Sleeper.

Tells how to listen to the high-power telegraph stations of fereign Construction of Radiophone and Telegraph Re-

How to Make Commercial Type Radio Apparatus, by M. B. S ceper.

Describes in detail many commercial types of transmitting spark and vacuum tube sets, both telephone and telegraph, and receiving equipment of all kinds.

Total phony Simply Ex-.75

Wireless Telegraphy and Telephony Simply Explained, by A. P. Morgan Experimental Wireless Stations, by P. E. Edelman 3.00 A B C of Vacuum Tubes Used in Radio Reception, by E. H. Lewis

A book explaining in detail all about vacuum tubes.
FREE! Catalorue of Wireless, Automobile
and Other Books Sent Free on Request. The Norman W. Henley Publishing Co. 2 West 45th Street, Dept. T, New York

Liberal Discount to Supply Houses. Write for full particulars and dealer's proposition.

Station WBZ, Springfield. (Westinghouse)

Pobertson, visita, we say the property of the political and the property of th

atrel show.

THURSDAY.

P. M.—Lafayette Drum Corps which wa organized January 1, 1898, composed o sixteen members. The Lafayette Drum Corps has won thirty-seven first princ and eight second prizes since November

(Signal Corps. U. S. A.)

POINTERS FOR RADIO ENTHUSIASTS

SEE the Continental exhibit at the Own Your Own Home Exposition, at the 69th Regiment Armory, April 22nd to 29th, inclusive. Booth No.

An elaborate display has been arranged to show you just how various types of ra-dio telephone receiving sets will look in your own home. Visit the Booth—listen to actual demonstrations, and let experienced Continental men explain, without obligation, just what kind of set would be the best for wherever you live.

If you cannot visit the Expo-sition, the same choice of sets and expert advice is always available at our store.





A snappy little Radio Set—

that takes less deck or table room then an ordinary dinner plate! Just a dercy for the home-house or apartment. No complicated or cumbersome parts. No batterier.

As simple and easy as a talking machine or kodak. Anybody can put it up. Chil-

dren can work it. Concerts, spe cches, lectures

news, church services, market reports, weather forecasts, time signals-all brought right into your home-FREE-every day and night in the year!



The "Hand Camera" of

Wireless!

Just read this: With my Radak, simply attaching to our kitchen buzzer for an antenna, I get code nd voices. Using the fire escape for antenna I get WJZ (Newark) music and entertainments so clearly I sometimes hear "side talk" in their studio. Piano accompaniments are distinct. At times can even hear singers take in a deep breath. If any one doubts this statement I will gladly prove it. P. H. COLLINS, 540 West 189th St., New York City.

The Radak Outfit is Complete: Double Slide Tuning Coil, Crystal Detector, Condenser, Binding Posts, all neatly, compactly mounted on Base Panel. Head Phones, 2000 ohms, with cord and binding post connectors. Antenna Wire, 100 feet No. 14 Copper. Ground and Lead-in Wires, 15 feet, rubber and cotton covered No. 18. Two Porcelain Insulators for antenna. Porcelain Tube Insulator for lead-in wire. Full instructions. All packed in a neat box.

Preprid enywhere in U. S. A., Radak Con plete, \$14.00. Panel Set only (without phones, antenna, lead-in and ground wires, insulators), \$6.00.

Fletcher Electric Co. 34 West 36th Street

DEALERS-Read between the lines! Phone-Fitzroy 1120

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